

Docket No. AUS920030078US1

**CLAIMS:**

What is claimed is:

1. A method for managing multicast groups in a system  
5 area network, the method comprising:  
    receiving a join request from a node for joining a  
    multicast group, wherein the node is connected to a first  
    switch and wherein the join request is a send-without-  
    receive request;  
10     determining whether the multicast group exists; and  
    if the multicast group does not exist, creating the  
    multicast group and routing the first switch to discard  
    all packets for the multicast group.
- 15 2. The method of claim 1, wherein the step of creating  
    the multicast group includes assigning a multicast  
    identifier to the multicast group.
3. The method of claim 1, wherein the step of routing  
20 the first switch includes inserting an entry for the  
    multicast group in a multicast routing data structure in  
    the first switch.
4. The method of claim 3, wherein the multicast routing  
25 data structure is indexed by multicast identifier.
5. The method of claim 3, wherein the entry for the  
    multicast group includes an indication that packets are  
    to be discarded.

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6. The method of claim 1, further comprising:

responsive to a join request from a receiving node,  
updating at least one multicast routing table for at  
least one switch in the system area network to route  
5 packets for the multicast group to the receiving node.

7. The method of claim 6, further comprising:

receiving a leave request from a second node for  
leaving the multicast group;

10 determining whether a single node remains in the  
multicast group; and

if a single node remains in the multicast group,  
routing a switch closest to the single node to discard  
all packets for the multicast group.

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8. A method for managing multicast groups in a system  
area network, the method comprising:

receiving a leave request from a second node for  
leaving a multicast group, wherein the multicast group  
20 has a first member at a first node connected to a first  
switch;

determining whether a single node remains in the  
multicast group; and

if a single node remains in the multicast group,  
25 routing the first switch to discard all packets for the  
multicast group.

9. The method of claim 8, wherein the first member is a  
send-without-receive member.

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10. The method of claim 8, wherein the step of routing the first switch includes inserting an entry for the multicast group in a multicast routing data structure in the first switch.

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11. The method of claim 10, wherein the multicast routing data structure is indexed by multicast identifier.

10 12. The method of claim 10, wherein the entry for the multicast group includes an indication that packets are to be discarded.

13. The method of claim 8, further comprising:

15 responsive to a join request from a receiving node, updating at least one multicast routing table for at least one switch in the system area network to route packets for the multicast group to the receiving node.

20 14. An apparatus for managing multicast groups in a system area network, the apparatus comprising:

receipt means for receiving a join request from a node for joining a multicast group, wherein the node is connected to a first switch and wherein the join request  
25 is a send-without-receive request;

determination means for determining whether the multicast group exists;

creation means for creating the multicast group; and

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routing means for routing the first switch to discard all packets for the multicast group if the multicast group does not exist.

5 15. The apparatus of claim 14, wherein the creation means includes means for assigning a multicast identifier to the multicast group.

10 16. The apparatus of claim 14, wherein the routing means includes means for inserting an entry for the multicast group in a multicast routing data structure in the first switch.

15 17. The apparatus of claim 14, further comprising:  
means, responsive to a join request from a receiving node, for updating at least one multicast routing table for at least one switch in the system area network to route packets for the multicast group to the receiving node.

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18. An apparatus for managing multicast groups in a system area network, the apparatus comprising:

25 receipt means for receiving a leave request from a second node for leaving a multicast group, wherein the multicast group has a first member at a first node connected to a first switch;

determination means for determining whether a single node remains in the multicast group; and

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routing means for routing the first switch to discard all packets for the multicast group if a single node remains in the multicast group.

5 19. The apparatus of claim 18, wherein the first member is a send-without-receive member.

20. The apparatus of claim 18, wherein the routing means includes means for inserting an entry for the multicast  
10 group in a multicast routing data structure in the first switch.

21. The apparatus of claim 18, further comprising:  
means, responsive to a join request from a receiving  
15 node, for updating at least one multicast routing table for at least one switch in the system area network to route packets for the multicast group to the receiving node.

20 22. A computer program product, in a computer readable medium, for managing multicast groups in a system area network, the computer program product comprising:

instructions for receiving a join request from a node for joining a multicast group, wherein the node is  
25 connected to a first switch and wherein the join request is a send-without-receive request;

instructions for determining whether the multicast group exists; and

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instructions for creating the multicast group and routing the first switch to discard all packets for the multicast group if the multicast group does not exist.

- 5 23. A computer program product, in a computer readable medium, for managing multicast groups in a system area network, the computer program product comprising:

instructions for receiving a leave request from a second node for leaving a multicast group, wherein the  
10 multicast group has a first member at a first node connected to a first switch;

instructions for determining whether a single node remains in the multicast group; and

instructions for routing the first switch to discard  
15 all packets for the multicast group if a single node remains in the multicast group.